**CURRENT STATUS OF THE CLAIMS**

***In the Claims***

The following is a marked-up version of the claims with the language that is underlined ("___") being added and the language that contains strikethrough ("~~—~~") being deleted:

1. (Previously Presented) A multielectrode array for receiving voltage signals from neurons, the multielectrode array comprising:

A substrate;

At least two electrodes partially contained in said substrate, each of said at least two electrodes having a carbon fiber with an exposed end extending beyond the substrate, an unexposed end within the substrate, and a center, said exposed end capable of being embedded in neural tissue, and

An electrical insulator covering at least a portion of each of the at least two electrodes.

2. (Original) The multielectrode array as in claim 1, where each of said at least two carbon fibers has any combination of at least one of the characteristics independently selected from the group consisting of: a coating on the exposed end, a sharpened tip, and varied length of the exposed end.

3-10. (canceled)

11. (Currently Amended) A multielectrode array for receiving voltage signals from neurons, the multielectrode array comprising:

A substrate;

At least two electrodes partially contained in said substrate, each of said at least two electrodes having a biocompatible wire with an exposed end extending beyond the substrate, an unexposed end within the substrate, and a center, said exposed end capable of being embedded in neural tissue, and said at least two electrodes being spaced from one another so that the spacing between ~~the centers of said exposed ends~~ a center of each exposed end of each said biocompatible wire does not exceed 45 microns; and

An electrical insulator covering at least a portion of each of the at least two electrodes.

12-24. (canceled)

25. (Currently Amended) A multielectrode array for receiving voltage from neurons and stimulating neurons with voltage signals, the array comprising:

A substrate, a metal wire, a preamplifier, and a current generator;

At least one receiving electrode partially contained in said substrate, each said at least one receiving electrode having a carbon fiber with an exposed end extending beyond the substrate, an unexposed end within the substrate, and a center, said exposed end capable of being embedded in neural tissue, said carbon fiber's unexposed end coupled to a the metal wire's first end, said metal wire's second end being coupled to the input to a the pre-amplifier;

At least one stimulating electrode partially contained in said substrate, each said at least one stimulating electrode having a carbon fiber with an exposed end extending beyond the substrate, an unexposed end within the substrate, and a center, said exposed end capable of being embedded in neural tissue, said carbon fiber's unexposed end coupled to a metal wire's first end, said metal wire's second end being coupled to the input to a ~~the~~ current generator; and

An electrical insulator covering at least a portion of the said at least one receiving electrode and the said at least one stimulating electrode.

26. (Original) The multielectrode array as in claim 25, where each of said at least two carbon fibers has any combination of at least one of the characteristics independently selected from the group consisting of: a coating on the exposed end, a sharpened tip, and varied length of the exposed end.

27-30. (canceled)

31. (Original) A multielectrode array for stimulating neurons with voltage signals and for receiving voltage signals from neurons, the multielectrode array comprising:

A substrate, a preamplifier, and a current generator;

At least one stimulating electrode partially contained in said substrate, each at least one stimulating electrode having a biocompatible wire with an exposed end extending beyond the substrate, an unexposed end within the substrate, and a center, said exposed end capable of being embedded in neural tissue and said unexposed end coupled to the input to a the current generator;

At least one receiving electrode partially contained in said substrate, each at least one receiving electrode having a biocompatible wire with an exposed end extending beyond the substrate, an unexposed end within the substrate, and a center, said exposed end capable of being embedded in neural tissue and said unexposed end coupled to the input to a the pre-amplifier; and

An electrical insulator covering at least a portion of the said at least one receiving electrode and the said at least one stimulating electrode.

32. (Original) The multielectrode array as in claim 31, where each of said biocompatible wires has any combination of at least one of the characteristics independently selected from the group consisting of: a coating on the exposed end, a sharpened tip, and varied length of the exposed end.

33-36. (canceled)

37. (Currently Amended) A multielectrode array for receiving voltage from neurons, stimulating neurons with voltage signals, and for providing feed-back between neurons, the array comprising:

~~Said~~ a substrate, a metal wire, a pre-amplifier, a current generator, a first metal, a second metal wire, a second carbon fiber, a band-pass amplifier, an output limiter, and a current supply;

At least one receiving electrode partially contained in said substrate, each said at least one receiving electrode having a carbon fiber with an exposed end extending beyond the substrate, an unexposed end within the substrate, and a center, said exposed end capable of being embedded in neural tissue, said carbon fiber's unexposed end coupled to a first end of a the

metal ~~wire's~~ wire ~~first end~~, a second end of the ~~said~~ metal ~~wire's~~ wire ~~second end~~ being coupled to the input to ~~a~~ the pre-amplifier;

At least one stimulating electrode partially contained in said substrate, each said at least one stimulating electrode having a carbon fiber with an exposed end extending beyond the substrate, an unexposed end within the substrate, and a center, said exposed end capable of being embedded in neural tissue, said carbon fiber's unexposed end coupled to a first end of ~~a~~ the metal ~~wire's~~ wire ~~first end~~, a second end of the ~~said~~ metal ~~wire's~~ wire ~~second end~~ being coupled to the input to ~~a~~ the current generator;

At least one feedback loop constituting a system partially contained in said substrate, containing a first carbon fiber with an exposed end capable of being embedded in neural tissue, ~~said~~ a first carbon fiber's unexposed end coupled to a first metal wire's first end, ~~said~~ a first metal wire's second end coupled to the input to ~~a~~ the pre-amplifier, ~~the~~ an output of said pre-amplifier coupled to ~~the~~ an input to ~~a~~ the band-pass amplifier, ~~the~~ an output from said band-pass amplifier coupled to ~~the~~ an input to ~~an~~ the output limiter, ~~the~~ an output of said output limiter coupled to ~~a~~ the current generator, said current generator coupled to the ~~said~~ a second end of ~~a~~ the second metal wire and also to ~~a~~ the current supply, ~~the said~~ a first end of said second metal wire coupled to ~~the~~ an unexposed end of a second carbon fiber; ~~the said~~ an exposed end of said second carbon fiber capable of being embedded in neural tissue; and

~~Said~~ an electrical insulator covering a portion of ~~for~~ each of the said at least one receiving electrode, said at least one stimulating electrode, and said at least one feedback loop.

38. (Currently Amended) The multielectrode array as in claim 37, where each of said ~~at least two~~ carbon fibers has any combination of at least one of the characteristics independently selected from the group consisting of: a coating on the exposed end, a sharpened tip, and varied length of the exposed end.

39-45. (canceled)

46. (Currently Amended) A multielectrode array for stimulating neurons with voltage signals and for receiving voltage signals from neurons, and for providing feed-back between neurons, the multielectrode array comprising:

A substrate, a current generator, a pre-amplifier, a band-pass amplifier, output limiter, a current generator, a second biocompatible wire, and a current supply;

At least one stimulating electrode partially contained in said substrate, each at least one stimulating electrode having a biocompatible wire with an exposed end extending beyond the substrate, an unexposed end within the substrate, and a center, said exposed end capable of being embedded in neural tissue and said unexposed end coupled to ~~the~~ an input to a the current generator;

At least one receiving electrode partially contained in said substrate, each at least one receiving electrode having a biocompatible wire with an exposed end extending beyond the substrate, an unexposed end within the substrate, and a center, said exposed end capable of being embedded in neural tissue and said unexposed end coupled to ~~the~~ an input to a the pre-amplifier;

At least one feedback loop constituting a system partially contained in said substrate, containing a first biocompatible wire with an exposed end extending beyond the substrate, an unexposed end within the substrate, and a center, said first biocompatible wire's unexposed end coupled to ~~the~~ an input to a the pre-amplifier, ~~the~~ an output of said pre-amplifier coupled to ~~the~~ an input to a the band-pass amplifier, ~~the~~ an output from said band-pass amplifier coupled to an ~~the~~ input to ~~an~~ the output limiter, ~~the~~ an output of said output limiter coupled to a the current generator, said current generator coupled to ~~the~~ a second end of a the second biocompatible wire and also to a the current supply, ~~the said~~ a first end of said second biocompatible wire capable of being embedded in neural tissue; and

~~Said~~ an electrical insulator covering a portion of ~~for~~ each of the said at least one receiving electrode, said at least one stimulating electrode, and said at least one feedback loop; and

An electrical insulator covering at least a portion of the said at least one receiving electrode and the said at least one stimulating electrode.

47. (Original) The multielectrode array as in claim 46, where each of said biocompatible wires has any combination of at least one of the characteristics independently selected from the group consisting of: a coating on the exposed end, a sharpened tip, and varied length of the exposed end.

48-54. (canceled)

55. (Currently Amended) A biosensing device, comprising:

A substrate, a metal wire, an amperometry device, a voltage source and a pre-amplifier, and a reference wire;

At least two biosensing ~~electrode~~ electrodes ~~circuits~~, each said at least two biosensing ~~electrode~~ electrodes ~~circuits~~ containing a biosensing electrode having a carbon fiber with an exposed end extending beyond the substrate, an exposed end within the substrate, and a center, said carbon fiber being coupled with ~~the~~ a first end of a metal wire, ~~said~~ a metal wire's second end being coupled with ~~an~~ the amperometry device, said amperometry device being coupled with ~~a~~ the voltage source and ~~a~~ the pre-amplifier, said voltage source being coupled with ~~a~~ the reference wire; and

An electrical insulator covering at least a portion of each of the biosensing electrodes and the reference wire.

56. (Currently Amended) The biosensing device as in claim 55, where each of said ~~at least two~~ carbon fibers has any combination of at least one of the characteristics independently selected from the group consisting of: a coating on the exposed end, a sharpened tip, and varied length of the exposed end.

57-60. (canceled)

61. (Currently Amended) A biosensing device, comprising:

A substrate, a metal wire, an amperometry device, a voltage source and a pre-amplifier, and a reference wire;

At least two biosensing ~~electrode~~ electrodes ~~circuits~~, each of said at least two biosensing ~~electrode~~ electrodes ~~circuits~~ containing a biosensing electrode having a biocompatible wire with an exposed end extending beyond

the substrate, an exposed end within the substrate, and a center, said biocompatible wire being coupled with ~~an~~ the amperometry device, said amperometry device being coupled with a the voltage source and a the pre-amplifier, said voltage source being coupled with a the reference wire, and said at least two biosensing electrodes being spaced from one another so that the spacing between the centers of said exposed ends of each biocompatible wire ~~said carbon fiber~~ does not exceed 20 microns; and

An electrical insulator covering at least a portion of each of the biosensing electrodes and the reference wire.

62. (Original) The biosensing device as in claim 61, where said biocompatible wire has any combination of at least one of the characteristics independently selected from the group consisting of: a coating on the exposed end, a sharpened tip, and varied length of the exposed end.

63-65. (canceled)

66. (Previously Presented) The multielectrode array as in claim 1, wherein the at least two electrodes are selected from the following: receiving electrodes and stimulating electrodes.

67. (Currently Amended) The multielectrode array as in claim 1, wherein each exposed electrode has a center, wherein said at least two electrodes being spaced from one another so that the spacing between the centers of said exposed ends of each said carbon fiber does not exceed 20 microns.

68. (Currently Amended) The multielectrode array as in claim 1, wherein each exposed electrode has a center, wherein said at least two ~~receiving~~ electrodes being spaced from one another so that the spacing between the centers of said exposed ends of each said carbon fiber does not exceed 45 microns.

69. (New) A multielectrode array for receiving voltage from neurons, stimulating neurons with voltage signals, and for providing feed-back between neurons, the array comprising:

a substrate, a metal wire, a pre-amplifier, a current generator, a first metal, a second metal wire, a second carbon fiber, a band-pass amplifier, and a current supply;

At least one receiving electrode partially contained in said substrate, each said at least one receiving electrode having a carbon fiber with an exposed end extending beyond the substrate, an unexposed end within the substrate, and a center, said exposed end capable of being embedded in neural tissue, said carbon fiber's unexposed end coupled to a first end of the metal wire, a second end of the metal wire being coupled to the input to the pre-amplifier;

At least one stimulating electrode partially contained in said substrate, each said at least one stimulating electrode having a carbon fiber with an exposed end extending beyond the substrate, an unexposed end within the substrate, and a center, said exposed end capable of being embedded in neural tissue, said carbon fiber's unexposed end coupled to a first end of the metal wire, a second end of the metal wire being coupled to the input to the current generator;

At least one feedback loop constituting a system partially contained in said substrate, containing a first carbon fiber with an exposed end capable of being embedded in neural-tissue, a first carbon fiber's unexposed end coupled to a first metal wire's first end, a first metal wire's second end coupled to the input to the pre-amplifier, an output of said pre-amplifier coupled to an input to the band-pass amplifier, an output from said band-pass amplifier coupled to an input to the current generator, said current generator coupled to the a second end of the second metal wire and also to the current supply, a first end of said second metal wire coupled to an unexposed end of a second carbon fiber; an exposed end of said second carbon fiber capable of being embedded in neural tissue; and

an electrical insulator covering a portion of each of the said at least one receiving electrode, said at least one stimulating electrode, and said at least one feedback loop.

70. (New) A multielectrode array for stimulating neurons with voltage signals and for receiving voltage signals from neurons, and for providing feed-70ck between neurons, the multielectrode array comprising:

A substrate, a current generator, a pre-amplifier, a band-pass amplifier, a current generator, a second biocompatible wire, and a current supply;

At least one stimulating electrode partially contained in said substrate, each at least one stimulating electrode having a biocompatible wire with an exposed end extending beyond the substrate, an unexposed end within the substrate, and a center, said exposed end capable of being embedded in neural tissue and said unexposed end coupled to an input to the current generator;

At least one receiving electrode partially contained in said substrate, each at least one receiving electrode having a biocompatible wire with an exposed end extending beyond the substrate, an unexposed end within the substrate, and a center, said exposed end capable of being embedded in neural tissue and said unexposed end coupled to an input to the pre-amplifier;

At least one feedback loop constituting a system partially contained in said substrate, containing a first biocompatible wire with an exposed end extending beyond the substrate, an unexposed end within the substrate, and a center, said first biocompatible wire's unexposed end coupled to an input to the pre-amplifier, an output of said pre-amplifier coupled to an input to the band-pass amplifier, an output from said band-pass amplifier coupled to an input to the output limiter, an output of said output limiter coupled to the current generator, said current generator coupled to a second end of the second biocompatible wire and also to the current supply, a first end of said second biocompatible wire capable of being embedded in neural tissue; and

an electrical insulator covering a portion of each of the said at least one receiving electrode, said at least one stimulating electrode, and said at least one feedback loop; and

An electrical insulator covering at least a portion of the said at least one receiving electrode and the said at least one stimulating electrode.